

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
22 July 2004 (22.07.2004)

PCT

(10) International Publication Number
WO 2004/062075 A2

(51) International Patent Classification⁷: H02M 3/00

(21) International Application Number:
PCT/US2003/041512

(22) International Filing Date:
31 December 2003 (31.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/437,584 31 December 2002 (31.12.2002) US

(71) Applicant (for all designated States except US): APOGEE
TECHNOLOGY, INC. [US/US]; 129 Morgan Drive, Nor-
wood, MA 02062 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): TSUI, Ping
[US/US]; 42 Crestview Drive, Malden, MA 02148 (US).
✓ DANIELSON, Michael, S. [US/US]; 26 Arnold Street,
Wrentham, MA 02093 (US).

(74) Agents: QUINN, Joseph, P. et al.; Brown Rudnick
Berlack Israels LLP, One Financial Center, Boston, MA
02111 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE,
SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,
VC, VN, YU, ZA, ZM, ZW.

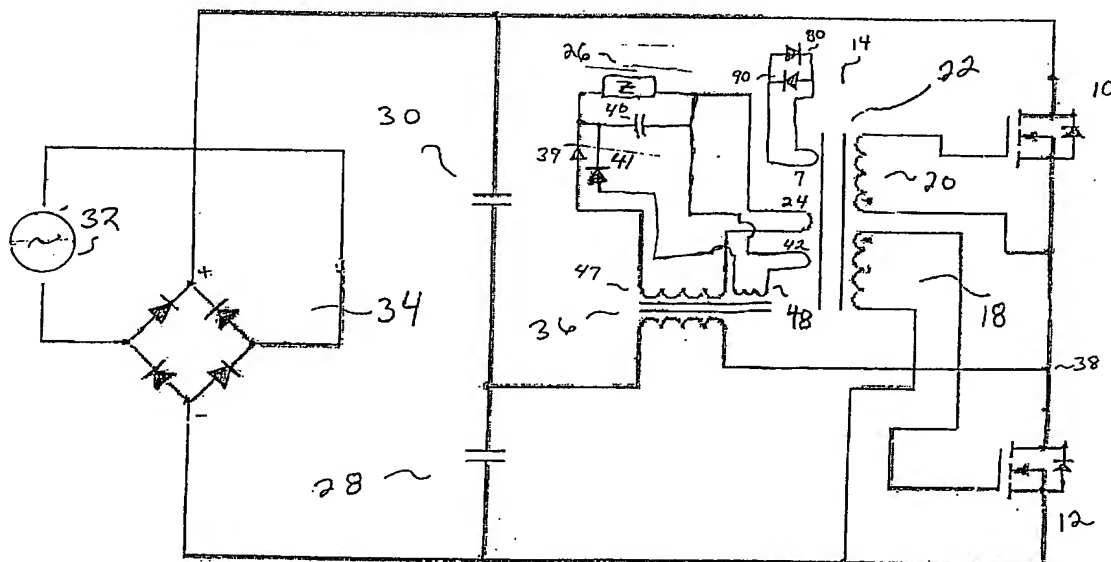
(84) Designated States (regional): ARIPO patent (BW, GH,
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,
SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished
upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: ADAPTIVE RESONANT SWITCHING POWER SYSTEM



(57) Abstract: A resonant switching power system operates with two resonant frequencies. A first frequency depends on the sec-
ondary leakage inductance of an output transformer and capacitor. The first frequency varies with changes in the load because load
changes alter the leakage inductance. A second resonant frequency depends on the gate source capacitance of two MOSFET power
devices in the circuit and the leakage inductance of the circuit's driving transformer. Power is thereby supplied that is always in phase
with the load so that switching in the power supply occurs when current is near zero. High thermal efficiency is thereby achieved.